



File ACT/037/032  
C.C. J. Whitehead

Norman H. Bangerter  
Governor

Suzanne Dandoy, M.D., M.P.H.  
Executive Director

**RECEIVED**  
OCT 02 1986

September 22, 1986  
538-6146

**DIVISION OF  
OIL, GAS & MINING**

Mr. Melvin R. Swanson, Manager  
Kelmene Corporation  
P. O. Box 1383  
Moab, Utah 84523

RE: Kelmene Corp. Lisbon Valley Mine  
Construction Permit

Dear Mr. Swanson:

We have reviewed the plans and specifications and other documentation submitted concerning the copper leach operation.

The plans and specifications as submitted comply with the code of waste disposal regulations and, therefore, a construction permit is issued as constituted by this letter subject to the following conditions:

1. Prior to commencing construction, the optimum moisture content of the clay liner material must be established, and the value and range must be submitted to the Bureau in writing. The construction of the clay liner must conform to these limits.
2. The Bureau of Water Pollution Control and Mr. Dave Ariotti, of the Southeastern District Health Department, 637-3671), must be notified prior to:
  - a. Beginning overall project construction
  - b. Beginning clay liner installation
  - c. Beginning synthetic liner installation
3. If a leak develops, as defined in this letter, in any of the synthetic lined systems, then per the information stated at the meeting on 29 August 1986 between the Bureau and yourself, the following action will be taken:
  - a. The operation of the leaking unit process will be discontinued, and the leak will be repaired within 60 days.
  - b. If the leak cannot be repaired, then the unit process will be abandoned or the portion which is leaking will be isolated so the leaking is stopped.

4. Based on the information presented in the 13 August 1986 letter on the containment of spillage solutions in the emergency spillage pond, no solution shall be contained in the spillage pond for more than 21 days. It is realized that there is a considerable amount of variation in chemical composition, duration and flow rate for the various streams which enter the emergency spillage pond. The intent of this requirement is to minimize the length of time these liquids are in the emergency spillage pond to minimize the head driving these liquids through the clay liner.
5. The clay material which will be used to construct the clay leak detection liner and the emergency spillage pond clay liner should have a minimum of 35 per cent passing the number 200 sieve.
6. We understand per phone conversation with yourself on 15 September 1986 that neutralization of sulfide tailings shall mean neutralization with milk of lime until a pH of 5.5 is reached, and then neutralization with water until a pH of 6.5 is reached.
7. We understand per phone conversation with yourself on 22 September 1986 the neutralization of oxide tailings shall mean neutralization with milk of lime until a pH in the range of 7.5 is reached, and then neutralization with water until a pH of 8.0 is reached.
8. Although not shown on the plans, the liner system for all Phase II (sulfide) leach pads will contain a 6-inch layer of acid resistant sand on top of the 30 mil geotextile. This is per agreement at the 29 August 1986 meeting with the Bureau and yourself.

The project approval was based in part on the following conclusions and information:

1. 

a.	Pretreatment area	1 foot
b.	Process ponds	1 foot
c.	Asphalt leach pad	1 foot
d.	Sulfide leach pad	1 foot
e.	Emergency Spillage pond	2 feet
2. The minimum requirements for construction testing of the leak detection clay liners and the emergency spillage pond clay liner are listed below. The result of the testing once completed and compiled must be sent to the Bureau of Water Pollution Control for evaluation.

<u>Test</u>	<u>Number of Tests</u>	
	<u>Per Grid Square</u>	<u>Grid Size Per Lift</u>
Atterburg Limits	1	100 ft. X 100 ft.
Gradation	1	100 ft. X 100 ft.
Compaction	1	50 ft. X 50 ft.
Permeability	1	150 ft. X 200 ft.
Thickness Verification	1	50 ft. X 50 ft.

3. For this project a permeability test shall be defined as a tri axial permeameter test or equivalent, which can obtain permeability values in a short period of time so the results can be evaluated before the next clay lift is laid.
4. Clay leak detection liners shall be laid in a minimum of (2) two lifts, and the emergency spillage pond liner shall be laid in a minimum of (3) lifts. Prior to laying the next clay lift, all testing indicated in No. 2 above shall be evaluated for compliance with minimum requirements. Areas of non compliance will be remediated before additional clay lifts are constructed.
5. The following design letters shall be included as addendum to the approved plans and specifications:
  - a. The 9 June 1986 letter from Kelmine to the Division of Oil, Gas and Mining shall be included.
  - b. The 9 June 1986 letter from Kelmine to the Bureau of Water Pollution Control shall be included.
  - c. The 13 August 1986 letter from Kelmine to the Bureau of Water Pollution Control shall be included.
6. For this construction permit, a leak will be defined as any liquid found in the leak detection system which contains chemical constituents found in the liquid contained by the liner.
7. Per conversation with yourself during the 29 August 1986 meeting, we were assured that materials used between the synthetic membrane and the clay leak detection liner to provide a medium for leakage to be collected will not react with any leakage which may come in contact with it.

8. If a leak is detected all operations of the affected unit process must cease, and the outlined repair activities must commence. The Bureau must be notified verbally within 24 hours and in writing within 7 days.
9. Once the leaching operations have been completed, the following procedure must be followed to insure that no water from the leach piles will enter the ground or surface water:
  - a. All leach pads, tailings piles, process areas, and process products which will remain on the site must be neutralized.
  - b. Ditches which divert surface runoff will be repaired and otherwise put in good condition so as to be able to continue to divert surface run off water around the leach heaps and tailings piles.
  - c. A cap will be placed over the sulfide tailings pile and the oxide tailings pile which will be sloped so precipitation will tend to flow off these piles.
10. The 6 inch thick layer of acid resistant gravel which will be used in the Phase II leach pad leak detection system and in the process pond leak detection system shall be minus 3/4 inch, per phone conversation with yourself on 15 September 1986.
11. Gradation tests shall be conducted on the imported clay liner material source at the rate of at least one each day while material is being excavated, or 1 test per 500 tons excavated.
12. We understand per phone conversation with Mr. Juan Rodriguez of Steffen, Robertson & Kirsten, Consulting Engineers, that the clay material which will be used for leak detection liners was not adversely affected when exposed to the pregnant liquors and can satisfactorily function as an impervious barrier.
13. The sulfuric acid storage tank and the sulfuric acid mix tank will be constructed in a bermed area capable of containing all the liquid from both tanks. All berm soil surfaces will be lined with two feet minimum of compacted clay. The concrete pad the tanks rest on and the concrete unloading spillage pad will be coated to protect the concrete from any acid spills.

The project, which has an estimated life of 16 years, consists of the mine, the pretreatment area, the Phase I leach pad, the Phase I tailings pile, the Phase II leach pad, the process ponds, the process area, the emergency spillage pond and associated piping.

The Phase I asphalt leach pad is approximately 350 feet by 250 feet and consists of, from the top down:

- (1) 3 inches of 7 per cent acid oil asphalt
- (2) A tack coat
- (3) 1 layer Phillips Petroleum Petrotac (bridge deck membrane)
- (4) 3 inches of 6 per cent acid oil asphalt
- (5) 12 inches of acid resistant road base gravel
- (6) 12 inches of compacted clay (in 2 lifts)

The Phase II leach pads (2 approved by this construction permit) are approximately 300 feet by 600 feet, and the liner system will consist of, from the top down:

- (1) 6 inches of acid resistance sand
- (2) 30 mil geotextile
- (3) 250 mil Deery Oil membrane
- (4) 30 mil geotextile
- (5) 6 inches of acid resistant gravel
- (6) 12 inches of compacted clay (in 2 lifts)

The emergency spillage pond will be approximately 150 feet by 100 feet and will be lined with a minimum of (2) feet of clay laid in at least 3 lifts.

The spillage and stormwater conveyance ditches will be lined with a 30 mil geotextile covered with a 125 mil Deery Oil membrane, and all acid pipe ways will be contained in an acid resistant trough. Any liquids which are spilled will be conveyed to the emergency spillage containment pond.

The process pond liner system varies between the bottom and the slopes. The minimum system consists of, from the top down:

- (1) 200 mil Deery Oil membrane
- (2) 6 inches of acid resistant crushed gravel
- (3) 12 inches of compacted clay laid in 2 lifts.

The Phase I leach pad, Phase II leach piles, and the process ponds all have leak detection systems which will be monitored daily.

The clay leak detection liner and the emergency spillage pond liner will be constructed of a clay material containing at least 35 per cent passing the No. 200 sieve, with no material larger than 1 inch in diameter and which will provide a permeability rate of  $1.0 \times 10^{-7}$  cm per second or less.

Kelmine Corporation  
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It should be understood that this construction permit covers only Phase II (sulfide) leach heaps No. 1 and No. 2 and does not cover Phase II leach heaps No. 3 and No. 4. A separate construction permit must be issued prior to beginning construction of leach heaps No. 3 and No. 4.

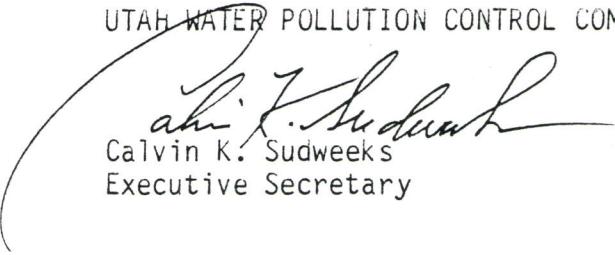
We are advising you that any increase in pH, lead and/cadmium in ground water or surface water above background level due to this project may cause the project to be listed on the national priority list of hazardous substance sites by EPA pursuant to the Comprehensive Environmental Response Compensation Liability Act (CERCLA).

All wastes not exempt under the mining exemption will need to be managed in accordance with Utah's Hazardous Waste Management Regulations (i.e. spent solvents, off specification acids and chemicals, etc.).

Please call Mr. Charlie Dietz of our staff if there are any questions.

Sincerely,

UTAH WATER POLLUTION CONTROL COMMITTEE



Calvin K. Sudweeks  
Executive Secretary

CGD:mw

cc: David Ariotti, Southeastern District Health Dept.  
John Whitehead, Division of Oil, Gas and Mining  
Terry McParland, Bureau of Land Management  
Pete Stewart, Bureau of Solid & Hazardous Waste  
Loren Morton, Bureau of Water Pollution Control

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